

stances be taken up by the candidates, either as an alternative or a positive branch of work.

Will the Universities help or impede the spread of school science teaching? The Universities adhere at present to their fatal principle that only one-sided knowledge shall find favour within their walls. A boy who knows nothing but classics, nothing but mathematics, nothing but science, may easily win a scholarship; a boy who knows all three must seek distinction elsewhere; and this rule shapes inevitably the teaching of the schools. The science scholarships at Oxford, of which we hear so much, fall mainly to three distinguished schools; two so large and wealthy that they can overpower most competitors by their expenditure on staff and apparatus, the third planted in Oxford, with access to the University museum and laboratory, and with a pick of teachers from the men of whom examiners are made; and these schools ensure success in science by abandoning other subjects almost or altogether in the case of the candidates they send up. No school which should carry out the recommendations of the Commissioners, by giving six hours a week to science, and the rest of its time to literature and mathematics; no school which should realise its function as bound to develop young minds by strengthening in fair proportion all their faculties of imagination, reason, memory, and observation, could offer boys for any sort of scholarship under the present University system with the faintest chance of success.

What these institutions are powerful to avert or helpless to bring about is, we repeat, within the scope of the British Association to effect. All institutions, political or educational, will bow to a strongly formed committee of scientific men, formally commissioned by the Association and speaking with authority, delegated as well as personal, on scientific subjects. Let such a Committee be revived as died on paper in 1871, including the acknowledged leaders of pure science, and weighted with the names of such educationalists as have shown themselves zealous for science teaching. Let their functions be—first, to communicate with the head-masters and governing bodies, calling attention to the recommendations of the Duke of Devonshire's Commission, asking how far and how soon each school is prepared to carry these out, and tendering advice, should it be desired, on any details as to selection and sequence of subjects, teachers, text-books, outlay. Secondly, let them appeal to the Universities, to which many of them belong, as to the bearing of science scholarships and fellowships upon school teaching, and the extent to which such influence may be modified or ameliorated in that re-arrangement of College funds which next session will probably be commenced. Thirdly, let them be instructed to watch the action of Government in any proposal made either in pursuance of Lord Salisbury's bill, or as giving effect to the Duke of Devonshire's Commission, and let them be known to hold a brief for school science in reference to all such legislation. A single meeting of such a committee before the Association separates would settle a basis of action and compress itself into a working sub-committee. The time for papers and discussions is past; they have done their work. What the schools and the head-masters want is authoritative guidance; the guidance not only of a blue-book, but of a living leader-

ship, central, commanding, and accessible, to which they may look with confidence, and bow without loss of prestige.

The precision of its dicta will clear up public confusion; its ability, conscientiousness, and popularity will overawe the clergy; schools and universities will listen respectfully to suggestions echoed by their own best men; and the three great departments of intellectual culture, equal in credit, appliances, and teaching power, will bring out all the faculties, and elicit the special aptitudes of every English boy.

"Hinc omne principium, huc refer exitum!"

HANBURY'S REMAINS

Science Papers; chiefly Pharmacological and Botanical.

By Daniel Hanbury, F.R.S., &c. Edited, with Memoir, by Joseph Ince. (London: Macmillan and Co., 1876.)

A NOT inconsiderable contingent to the army of workers in science has been furnished by London trade. The ranks of our geologists, zoologists, and biologists, have been recruited to a larger extent than many might suppose from city counting-houses. But one would still hardly expect to find the same wholesale chemist's shop in an obscure court out of Lombard Street send forth, in two successive generations, two Fellows to the Royal Society. Except, however, in their common love of science, Daniel Hanbury was a very different man from William Allen, the druggist and Quaker preacher, the lecturer on chemistry and intercessor on behalf of the rights of conscience with almost all the "crowned heads" of Europe.¹ Retaining through life a warm attachment to the religious body in which he was born, Hanbury's religion was nevertheless of the closet rather than the forum; few of his friends ever heard him speak on religious subjects; and anything in the shape of proselytising was altogether alien to his mental constitution. Essentially a specialist, he was at the same time, what the best specialist must always be, an educated gentleman.

From the time when, as a very young man, he contributed his first essays to the *Transactions* of the Pharmaceutical Society, till his death at the early age of forty-nine, when a long career of usefulness seemed to be before him, the object to which Hanbury set himself was the clearing up of uncertain or disputed points regarding the botanical origin of drugs known to the pharmacopœias of this and other countries. Notwithstanding what he and fellow-workers on the Continent have done, it is surprising to find in how great obscurity the history is still involved of many medicinal substances which are daily prescribed by physicians and dispensed by druggists. The larger portion of the present volume is occupied with papers bearing on questions of this nature; those which will probably be found of the greatest value to posterity are:—"On the Different Kinds of Cardamom used in Commerce," "On Liquid and Solid Storax," "On the Source of Balsam of Peru," "Historical Notes on the *Radix galangæ* of Pharmacy," and "On the Determination of *Pareira brava*."

Hanbury's inquiries were characterised, above all things, by extreme thoroughness. No amount of research,

¹ Mr. Luke Howard, F.R.S., the eminent meteorologist, was also, for a short time, a partner with Allen.

no amount of personal labour, was spared to clear up or elucidate the smallest point bearing on the subject he was engaged in investigating. A good illustration of his mode of working is furnished by a paper read before a meeting of the British Pharmaceutical Congress held at Brighton, in 1872, "On Calabrian Manna." Manna is stated, in the "British Pharmacopœia" of 1867, to be "a concrete saccharine exudation from the stem of *Fraxinus Ornus*, L., and *F. rotundifolia*, D. C., which trees are cultivated for the purpose of yielding it chiefly in Calabria and Sicily." Never having heard of manna plantations in Calabria, nor seen Calabrian manna, Hanbury determined, after having acquainted himself with the literature of the subject, ancient and modern, to visit Italy himself in order to set the question at rest. At Florence he found the article almost unknown. Reaching Rossano, a town in Calabria Citra, he there found that the manna trees grow on some of the adjacent mountains, but are not cultivated; and that the collecting of the manna is a very small and insignificant branch of industry. "The habits of the Calabrian peasantry," he naïvely observes, "are such that it is impossible for travellers to quit the high roads without personal danger." At Corigliano, which, according to Murray's "Handbook," produces "the finest manna in Calabria," the industry is altogether extinct. At Cosenza, the capital of the province, anciently renowned for manna, he found the substance almost unknown to the druggists, one of whom assured him that its collection had been prohibited for the last six or seven years. Finally, a prominent English merchant at Messina was ignorant of the existence of such a commodity. The conclusion to which Mr. Hanbury came was that Calabrian manna has practically ceased to exist as an article of commerce, and that its collection in that part of Italy is on the verge of extinction. With regard, also, to De Candolle's species of manna-ash, *Fraxinus rotundifolia*, Hanbury's observations on the spot induced him to believe that while the *F. Ornus* is a very variable plant, there is no special form of it, and still less any distinct species, answering to the characters of *F. rotundifolia*.

By similar exhaustive investigations, Mr. Hanbury determined various other pharmacological questions of greater or less importance, of which two may be specially mentioned. In his paper on Storax, he shows that while the substance known under this name in ancient times was obtained from the *Styrax officinale*, L., it has altogether disappeared from the commerce of modern days, the resin now known as liquid storax being—notwithstanding erroneous assertions to the contrary in some writings of high authority—the product of a totally different tree, *Liquidambar orientale*, Mill., a native of the south-west of Asia Minor, where the drug is collected. The drug known in the British Pharmacopœia as "*Pareira brava*," was referred by most writers, without question, to the stem and root of *Cissampelos Pareira*, L., a climbing plant of the order Menispermaceæ, growing in the tropical regions of both the Old and New World. A scarcity of the article induced Mr. Hanbury, some years ago, to endeavour to obtain a supply from the West Indies. Having been furnished with the stems and roots of the plant in question, not only from Jamaica, but also from Trinidad, Ceylon,

and Brazil, he soon discovered that the accepted statement was altogether erroneous. He then set himself to discover what "*Pareira brava*" really is; and a careful examination of the different descriptions by botanists and travellers, and of specimens obtained from various correspondents, led him to identify it with *Chondodendron tomentosum*, Ruiz et Pav., a native of Brazil, belonging to the same natural order. Mr. Hanbury was in the habit of preserving and carefully labelling, in his own museum, specimens of anything that could bear on the subjects of his inquiries; and his investigations were greatly assisted by unusual opportunities for growing foreign plants furnished by an extensive garden with abundance of glass, cold and heated, in one of the suburbs of London. Here was a true "botanic garden" to delight the heart of a pharmacist.

Mr. Hanbury's presence is sorely missed by his fellow-members of the various learned societies to which he belonged, especially of the two from the meetings of which he was seldom absent—the Pharmaceutical and the Linnean; where his varied information was constantly giving life to the discussions, his urbanity of manner smoothing down any difference of opinion, and his business habits ready to assist at a critical moment. The last few months of his life saw the publication of his most substantial contribution to literature, the "Pharmacographia," brought out in joint authorship with his friend Prof. Flückiger, of Strasburg, to the importance of which these pages have already called attention.

DYNAMITE

Die Dynamite, ihre Eigenschaften und Gebrauchsweise.
Von Isidor Trauzl. (Berlin: Verlag von Wiegandt, Hempel, und Parey, 1876.)

THE instructive brochure published under the above title affords an interesting illustration of the widespread applications now received by those violent explosive agents, nitroglycerine and gun-cotton, the practical value of which was regarded as doubtful even twelve years ago, by all but the few who devoted themselves indefatigably to the development of the manufacture, purification, and application of those substances. Capt. Isidor Trauzl has for some time past been intimately connected with the dynamite industry on the Continent, and is a very intelligent exponent of the properties and uses of the nitroglycerine preparations which owe their origin to the sagacity, ingenuity, and untiring labours of Alfred Nobel. The endeavours of Nobel to overcome the uncertainty and danger attending the application of nitroglycerine in its undiluted condition as an explosive agent, were eventually crowned with success by his elaboration of the plastic nitroglycerine preparations known as *dynamites*, of which the earliest, and that specially known as Nobel's dynamite, consists of the infusorial earth, *kieselguhr*, mixed with about three times its weight of nitroglycerine, which it holds absorbed, even under considerable variations of temperature, if the preparation be carefully manufactured. This material is the most violent nitroglycerine preparation now in use; it closely resembles Abel's compressed gun-cotton in explosive power as well as in regard to its action, and it is now very extensively used in all parts of the world, for mining, engineering, and other industrial purposes.